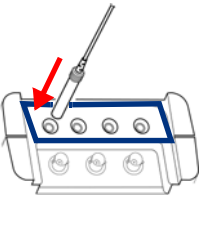


This measurement guide gives a step-by-step explanation of operations from setup to data analysis. For detailed explanations, refer to the INSTRUCTION MANUAL.

## Step 1. Preparation

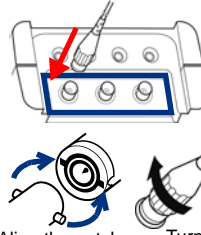
1. Set the instrument near the measurement location.

2. Connect the voltage cords.



Terminal Wiring	N	U1	U2	U3
1P2W	●	●		
1P3W	●	●	●	
3P3W2M	●	●	●	●
3P3W3M		●	●	●
3P4W	●	●	●	●
3P4W2.5E	●	●	●	●

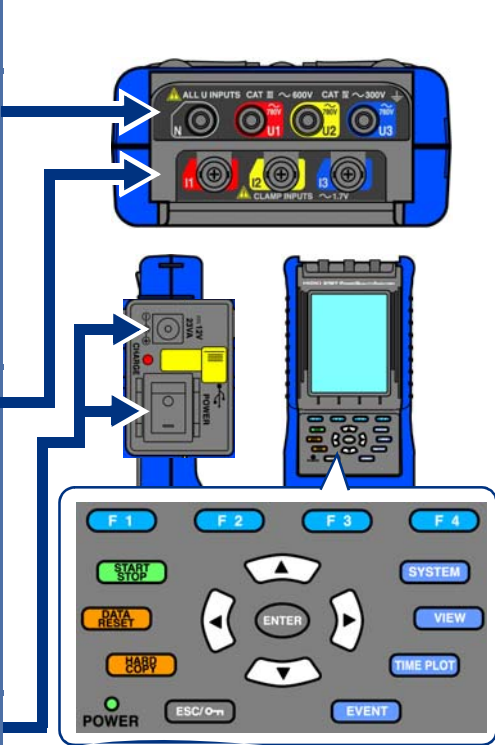
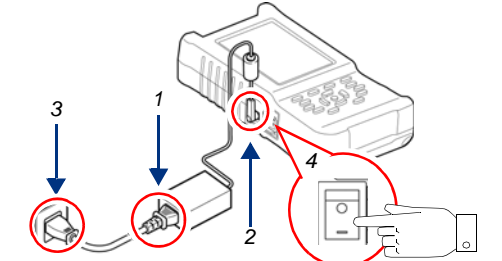
3. Connect the clamp sensors.



Terminal Wiring	I1	I2	I3
1P2W	●		
1P3W	●	●	
3P3W2M	●	●	●
3P3W3M		●	●
3P4W	●	●	●
3P4W2.5E	●	●	●

Align the notches with the guide pins. Turn the plug clockwise to lock.

4. Connect the AC adapter to the instrument and turn the instrument's power switch on.



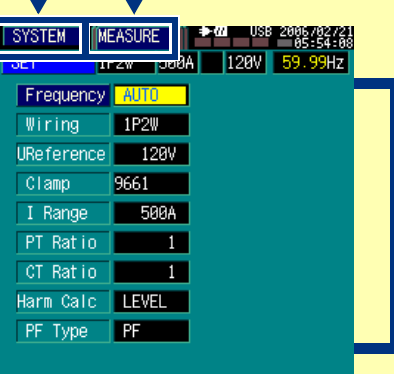
<b>ENTER</b>	Accepts and applies selections and changed settings.
<b>START STOP</b>	Starts and stops recording
<b>DATA RESET</b>	Returns to the setting state. (Data processing)
<b>HARD COPY</b>	Saves the screen image in internal memory
<b>ESC/ON</b>	Cancels selections. Hold for 3 seconds to enable/disable Key Lock.

## Screen and Key Operation

### Switching screens

The screen switches every time you press the **SYSTEM**, **VIEW**, **TIMEPLOT**, or **EVENT** key.

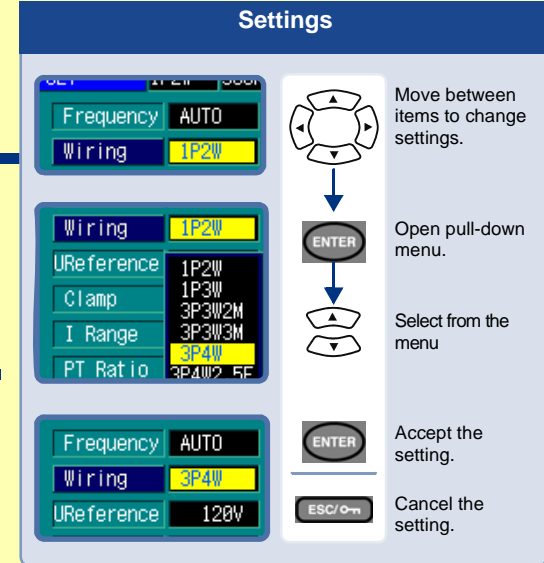
Screen Type	Screen Contents			
SYSTEM	WIRING	MEASURE	REC&EVENT	SYSTEM
VIEW	WAVEFORM	VECTOR	HARMONICS	DMM
TIME PLOT	RMS	DIP/SWELL	DEMAND	ENERGY
EVENT	WAVEFORM	DETAIL	RMS WAVE	INRUSH



Press ENTER and select the frequency of the line being measured. Select AUTO for automatic frequency setting.

**Selecting display / function**

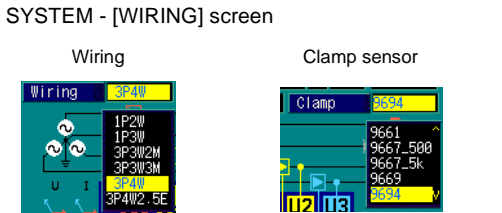
Display differs depending on the screen type.



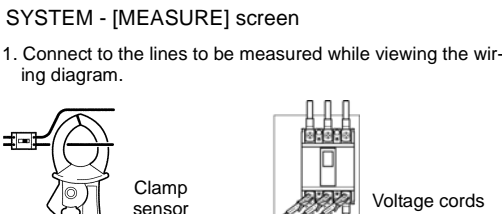
**Help comment**  
Shows a description of the item at the cursor position on the SYSTEM screen.

## Step 2. Setting Up

1. Select the appropriate wiring configuration and clamp sensor model settings.



2. Connect to the lines to be measured and check the wiring.



1. Connect to the lines to be measured while viewing the wiring diagram.

2. Verify that the setting contents, vector diagram, and measurement values are displayed correctly.

**<Check>**

- Values of current range and/or frequency are not displayed in red.
- Vector display is identical with the "Correct Vector Diagram".
- Voltage vectors (U1, U2, U3) and current vectors (I1, I2, I3) are displayed.
- Displayed active power value (P1, P2, P3) is not negative.

3. Execute advanced setup if required.

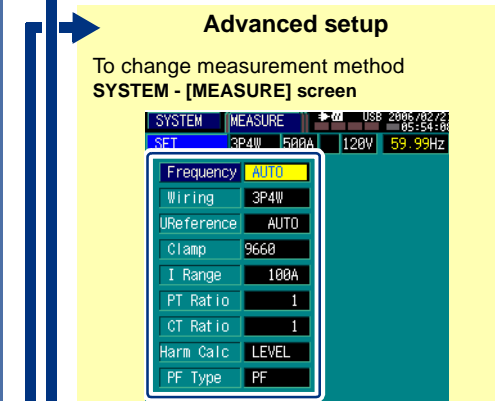
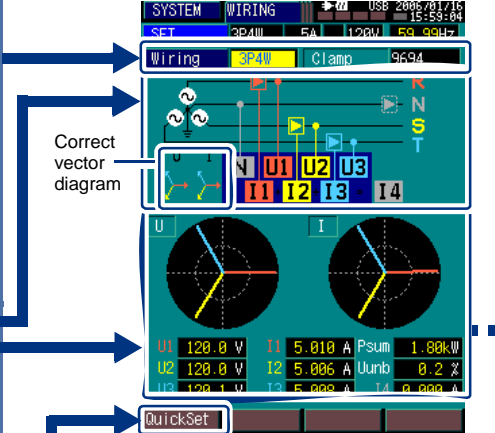
4. Execute QuickSet.

- Press **F1** to select [QuickSet].
- Press **ENTER** to execute QuickSet.

**QuickSet settings**  
(set automatically)

Setting Item	Setting Contents	Setting Item	Setting Contents
Frequency	AUTO	Urms DIP	90%
UReference	AUTO	Interruption	10%
Interval	AUTO	U Transient	ON
Urms SWELL	110%		

Note) The above settings are set automatically as shown above even if they have been changed in Advanced Setup.



**Advanced setup**

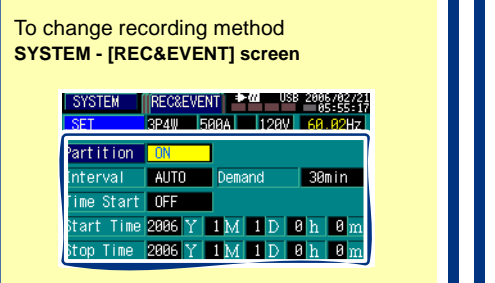
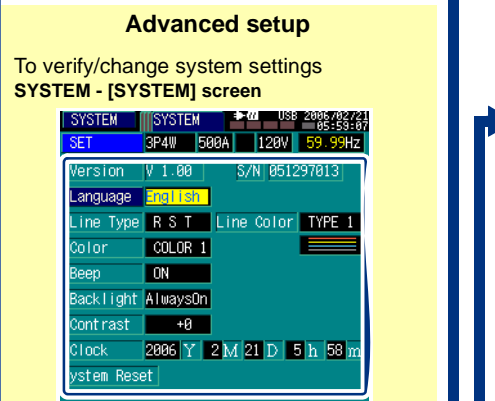
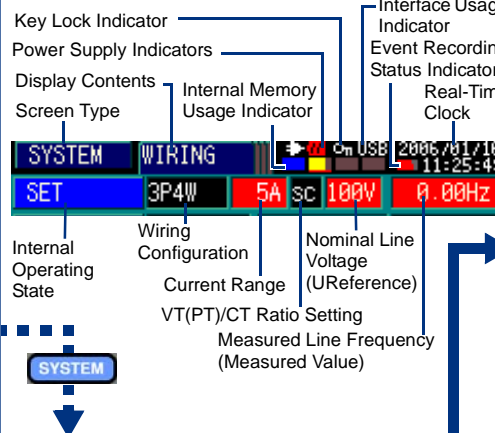
To change measurement method  
**SYSTEM - [MEASURE] screen**

To customize event detection settings  
**SYSTEM - [REC&EVENT] screen**

Setting Items	Description
Timer Evt	Records events at specified time intervals.
Inrush	An event is recorded when the specified value is exceeded.
U Transient	An event is recorded when high frequency impulse noise is imposed on the mains voltage waveform.
Urms SWELL	Any momentary deviation of rms voltage from the nominal line voltage (UReference) is recorded as an event.
Urms DIP	
Interruption	

To record event manually: **ESC/ON** + **EVENT**

## Step 3. Recording



Setting Items	Description
Partition	Specifies whether memory is to be partitioned for recording. [OFF]: Recording only one time. [ON]: Recording multiple times (up to four times)
Interval	Sets the recording interval (AUTO: recommended)
Demand	Sets Demand (demand calculation period)
Time Start	Specified start and stop times for timed recording
Start Time	Sets recording start time and recording stop time by setting Time Start to ON.
Stop Time	

Recording start condition

Make sure Internal Operating State is **SET**.



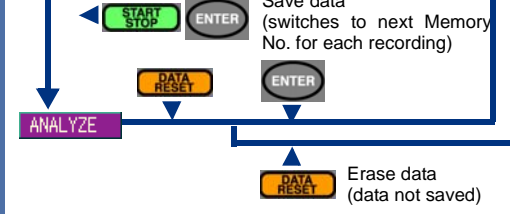
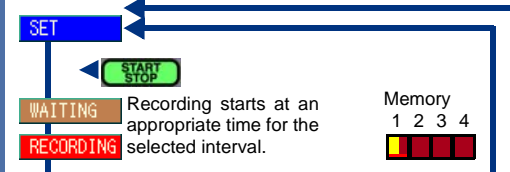
Recording with specified start/stop time

Start/stop recording at the set start time/set stop time.



Recording again (Erasing recorded data)

Erase internal data to execute measurement again.



The above can be repeated for Memory No. 1 to 4. Returns to [SET] when recorded data is saved to Memory No. 4. (Press **DATA RESET** during [SET] to erase entire internal memory.)

**Internal Memory Usage Indicator**

1 2 3 4	Partition: [OFF], when starting recording
1 2 3 4	Partition: [OFF], when about two-thirds of memory used
1 2 3 4	Partition: [ON], second measurement, when starting recording
1 2 3 4	Partition: [ON], second measurement, when about two-thirds of memory used
1 2 3 4	Partition: [ON], recording in the fourth partition (Memory No. 4)

## Step 4. Viewing Instantaneous Data

View instantaneous measurement conditions.  
(Refreshed approx. every second.)

Screen Display	Description
[WAVEFORM]	Displays instantaneous measurement values. Measurement data can be viewed at any time regardless of recording start or stop state.
VIEW [VECTOR]	
[VIEW] [HARMONICS]	
[DMM]	

Press the **F4** key to hold the display.  
(Press again to disable hold.)

Display Hold	Display Hold disabled
<b>HOLD</b>	<b>HOLD</b>

### WAVEFORM

Displays voltage and current waveforms.

### VECTOR

Displays a voltage and current vector diagram.

### HARMONICS

Displays the results of harmonic waveform measurements of voltage, current, and active power to the 50th order.

### DMM

Displays the instantaneous voltage, current, and power values for each measurement channel.

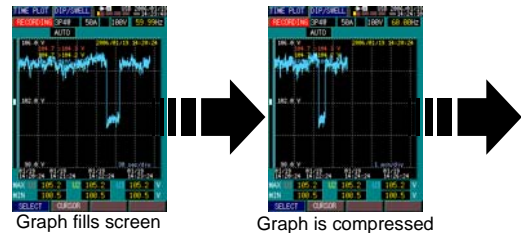
## Step 5. Viewing Recorded Measurement Data

(recorded measurement data is backed up even when the instrument's power is turned off)

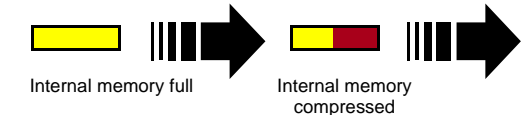
Viewing measurement process and results

Screen Display	Description
[RMS]	Displays data at each measurement interval as a time series graph. Shows fluctuations that occur between recording start and stop.
TIME PLOT [DIP/SWELL]	
[TIME PLOT] [DEMAND]	
[ENERGY]	

Updating the screen



Compressing internal memory



The time series graph displays within the screen at all times each measurement result from recording start.

### RMS

Displays calculated rms values are displayed in a time series graph with maximum, minimum, and average values during every interval.

### DIP/SWELL

Displays calculated rms voltage for one waveform shifted by one-half cycle.

### DEMAND

Displays demand values for each specified demand period.

### ENERGY

Energy consumption values of active power [kWh] or reactive power [kvarh] are displayed.

Screen Display	Description
[WAVEFORM]	Displays the results of event detection. Shows the contents of events detected between recording start and stop.
EVENT [DETAIL]	
[EVENT] [RMS WAVE]	
[INRUSH]	

Event monitor	Transient	Swell	Dip	Inter.	Ext.
Tran.	22	0	42	42	2

No.	Date	TIME	EVENTS
17	01/19	12:09:10.755	INTER. CHI OUT
18	01/19	12:09:10.911	TRANSIENT
19	01/19	12:09:20.265	DIP CHI IN +U
20	01/19	12:09:20.310	TRANSIENT
21	01/19	12:09:21.391	INRUSH
22	01/19	12:09:21.510	TRANSIENT
23	01/19	12:09:28.728	TRANSIENT
24	01/19	12:09:28.725	DIP CHI IN +U

**Event Recording Status Indicator**

- Indicates that six events have been recorded
- Indicates that 46 events have been recorded

### WAVEFORM

Displays voltage waveforms and current waveforms at event detection alternately.

### DETAIL

Displays list and details at event detection.

### RMS WAVE

Displays a graph showing rms voltage fluctuations at event detection.

### INRUSH

Displays a graph showing inrush current fluctuations at event detection.

## Step 6. Viewing Recorded Data (Measurement Data, Screen Image) on a Computer

Screen image

< Save screen image >

Sample Message

CHECK!  
BMP data saved.  
Data number : 4  
Remaining volume [kB] :671  
Press ESC to close window.

**NOTE**  
Approximately 30 to 40 screen images can be stored in internal memory.  
Press the **F4** key to store the displayed screen.

3197 Applications (Install from the supplied CD.)

3197

Operate the instrument remotely. (observation, control and screen capture)

Download screen images and measurement data from the instrument's internal memory.

Analyze data recorded by the instrument

Computer

USB Cable

**NOTE**  
You can also analyze recorded measurement data with the 9624-50. (Available soon)

**3197 Communicator**

- Remote operation
- Download

**3197DataViewer**

- Recorded measurement data analysis

Measurement data (TIME PLOT data)

<Automatic data recording compression function>

This function begins recording at one-second intervals and automatically lengthens the recording interval to up to an hour as internal memory fills. This function helps to ensure that suitable data quantities are acquired for analysis, whether the overall measurement period is short or long. This function supports continuous measurement sessions of up to about 125 days.

Measurement data (EVENT data)

<Recordable Number of Events>

The number of events that can be recorded is as follows regardless of whether internal memory is partitioned.

Event	Recordable Qty.	Description
Event data	Total 50	Event List, details, voltage/current waveforms
Event voltage fluctuation graph data	Total 20	Event voltage fluctuation graph for 4 seconds
Inrush current fluctuation graph data	1	Inrush current fluctuation graph for 30 seconds

USB connection procedure

- Remove the dust cap from the USB port  
(The cap bends along the dotted line shown in the illustration on the right and remains attached to the unit.)
- With attention to connector orientation, insert the USB cable plug into the port.